Collider-Accelerator Department

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for the U.S. Department of Energy

# Memo

*Date:* *March 26, 2015*

*To:* *RSC, H. Huang*

*From:* *D. Beavis* *& P. Bergh*

*Subject:* *Check-off list and Area Posting*

The areas around the C-AD facility that have been posted as High Radiation Areas due to potential fault condition, are in the process of being surveyed and reposted as either Radiation Areas or Controlled Areas. Some of these areas may be inside existing posted Controlled or Radiation Areas. If this is the case for an area then the benefits of double posting will be evaluated by the RCD Representative.

This memorandum documents the surveys and running conditions for areas around the AGS ring. It has been sent to the LP for the AGS ring and the entire RSC to inform everyone that the surveys and reposting is in progress. When future areas are examined the documentation will be sent to the LP for the area and a copy to the RSC memo file but not distributed to the RSC. Members can always gain access to the documentation through the RSC memos folder online.

Areas that have potential radiation from the AGS ring had radiation surveys conducted during routine proton operations with polarizations protons on Janurary 22, 2015 at about 10:30. The injected proton intensity was $3.5*10^{11}$ protons per cycle and the final accelerated intensity was $2.6*10^{11}$ protons per cycle. The areas that were surveyed were:

- Fan houses A,B,C,D,E
- HITL to AGS spur
- North west corner of the target building

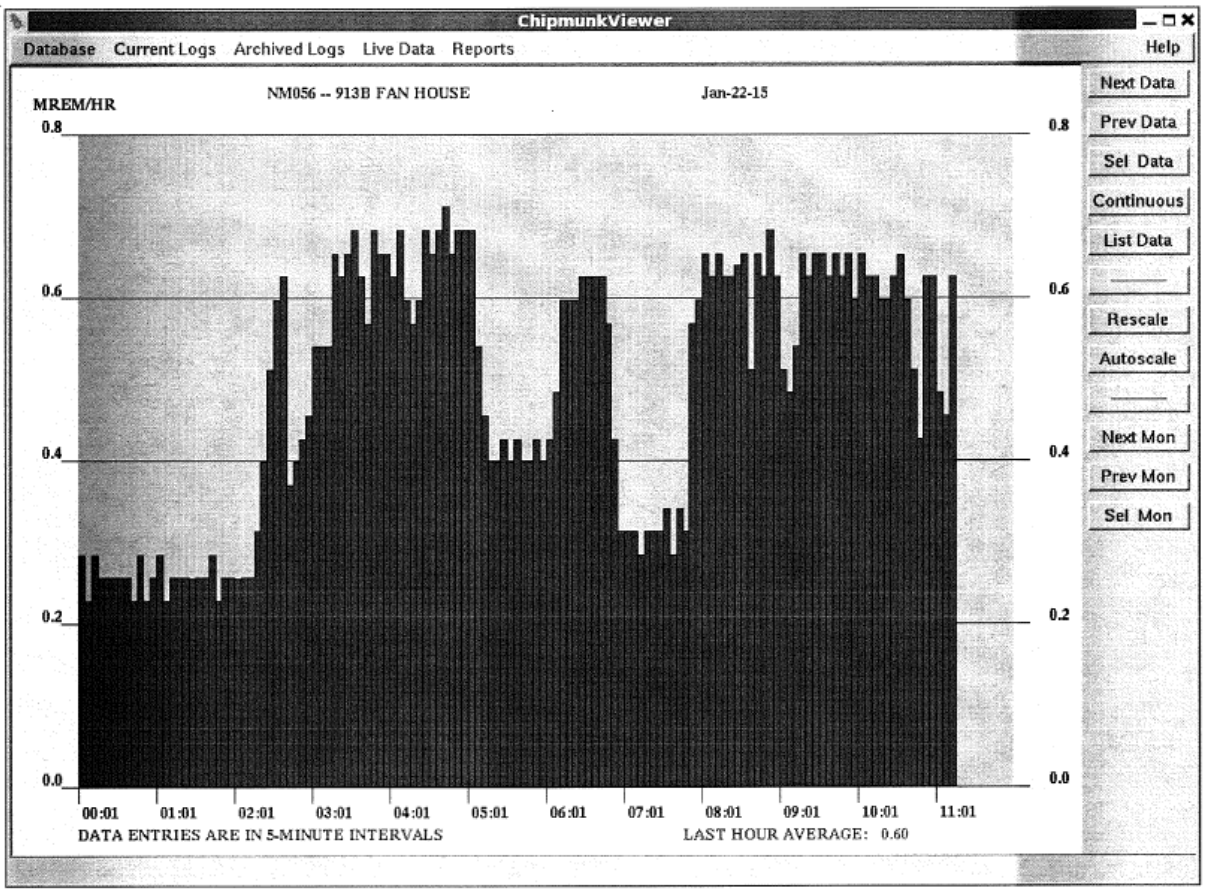
The highest radiation level detected was 0.4 mrem/hr in the B fan house. Other areas were consistent with the minimum detectable level of 0.2 mrem/hr. The survey in the fan houses were conducted at the wall of the machinery housing. The distance from the housing to the duct is approximately eight feet. The machinery housing has two access ports which are labeled as confined spaces.

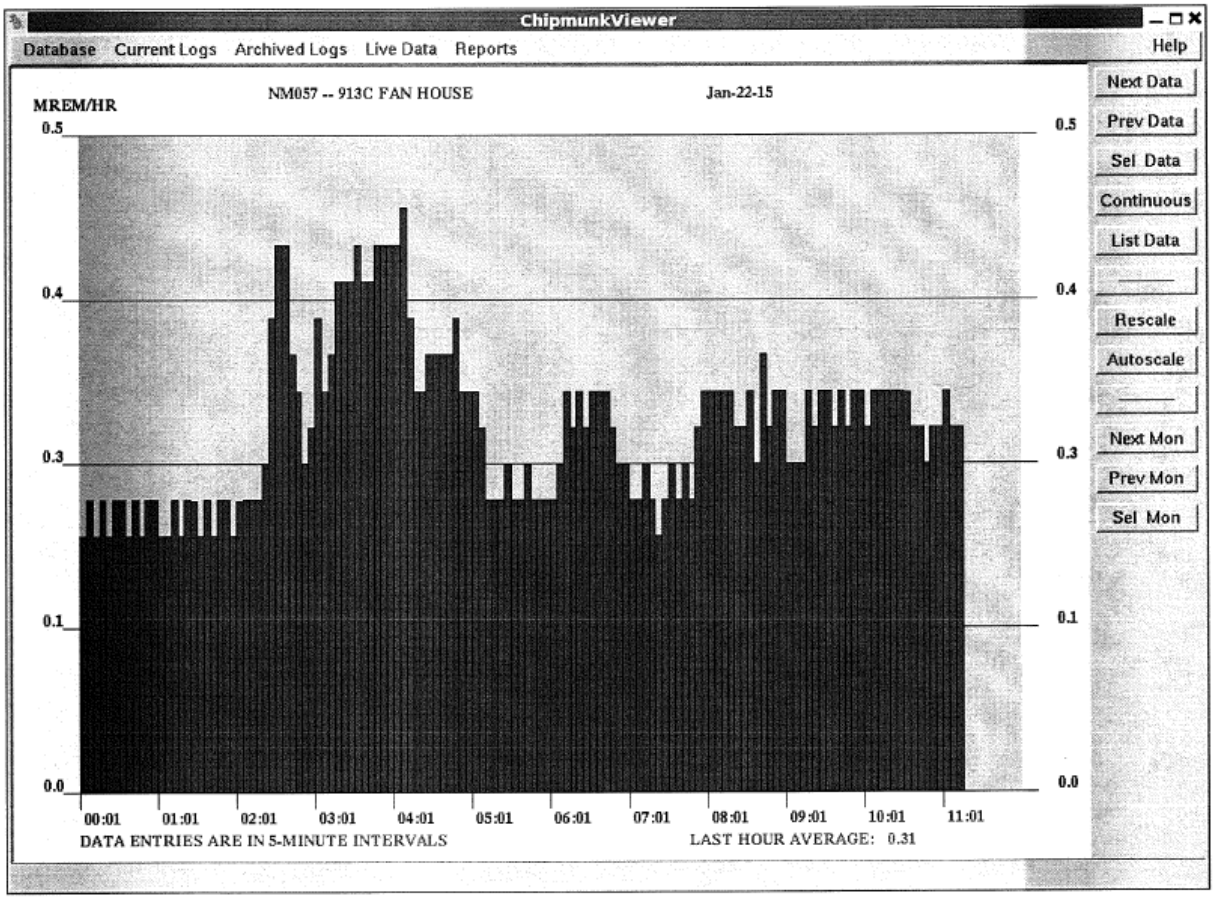
The surveys are filed in the HP archives, the chipmunk data relevant to the time period are attached in appendix I, and the present and proposed posting in Appendix II.

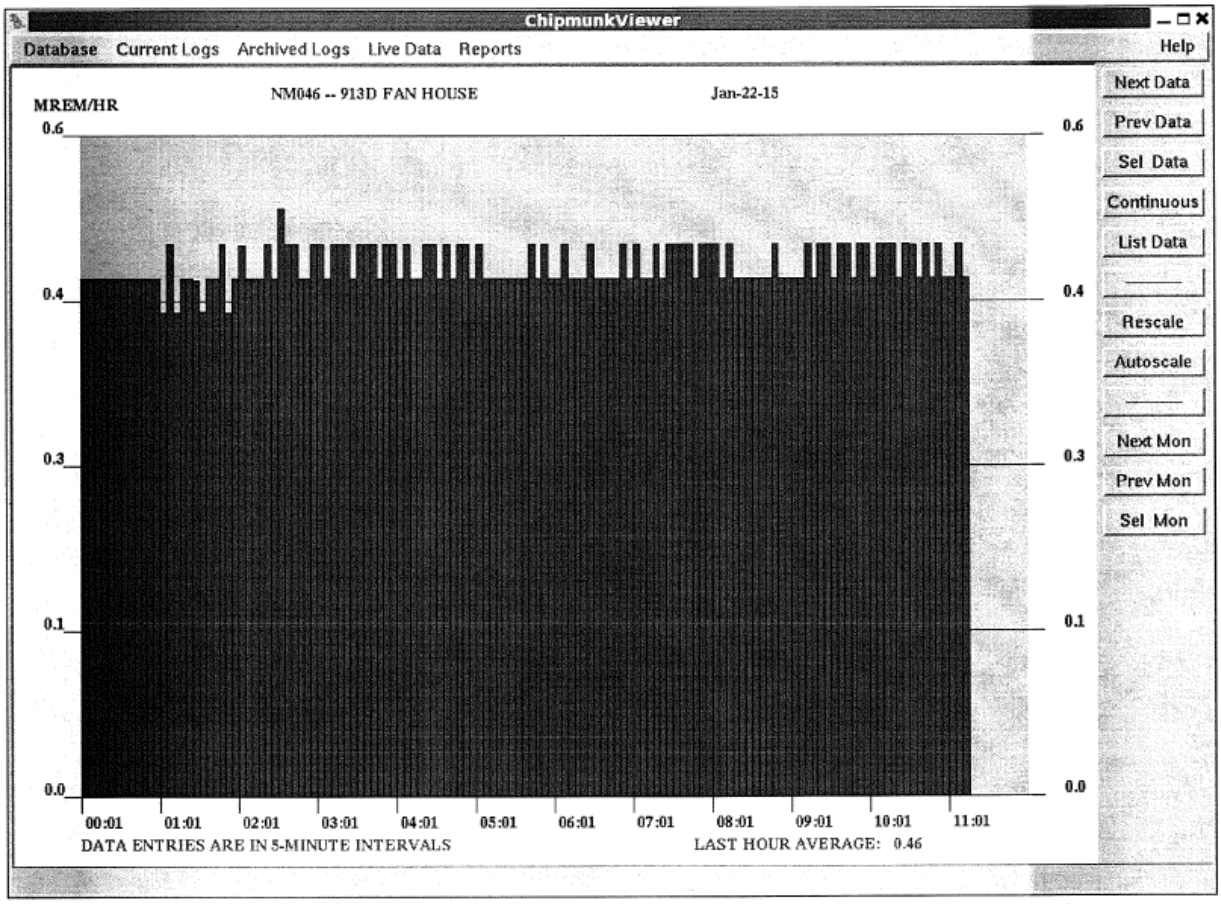
The fan houses and the northwest corner of the target building are inside an existing Radiation Area that encompasses most of the AGS ring and adjacent areas. These areas do not need to be explicitly posted as a Radiation Area unless the exterior posting is changed. All have the source of radiation as beam in the AGS ring.

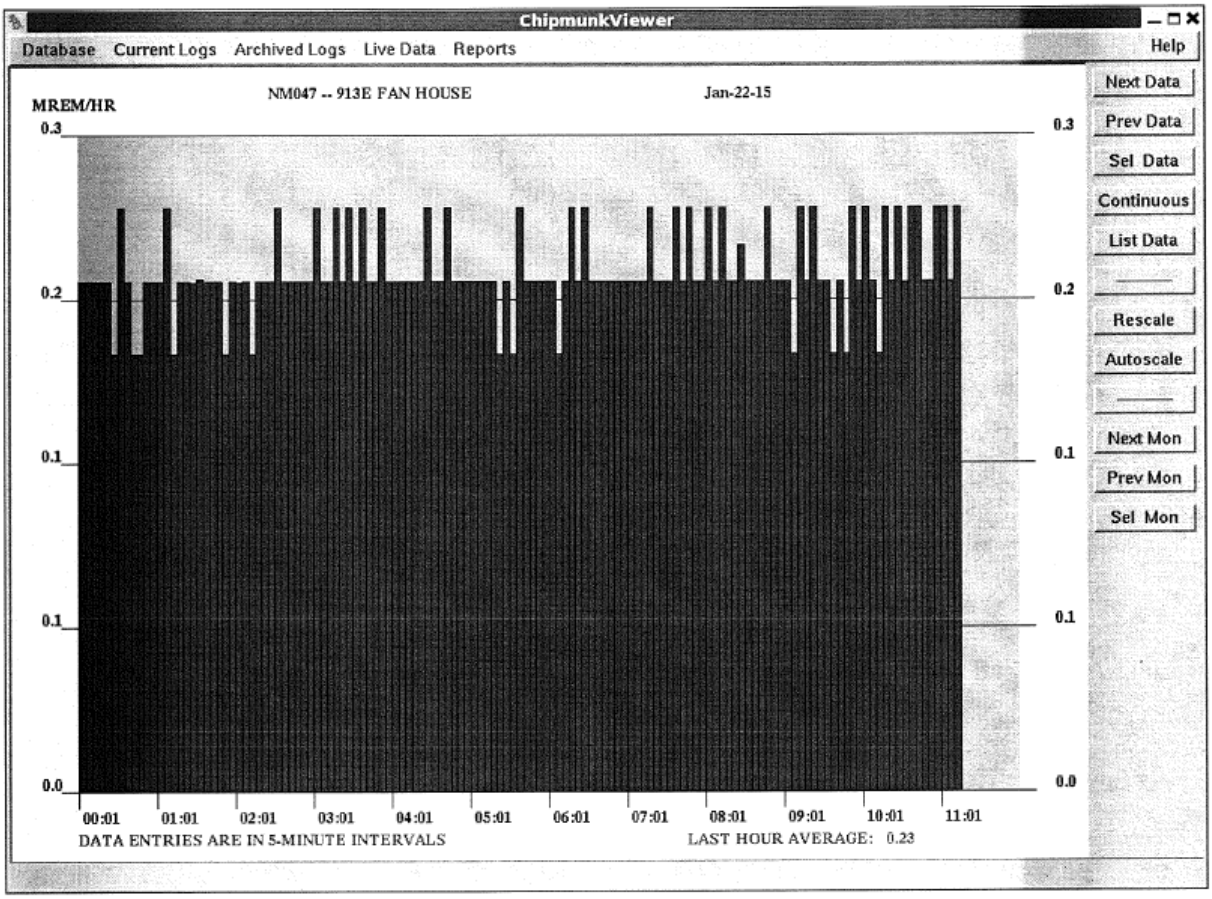
The gates to the TtB tunnel are posted Radiation Area due operations of ion beam in the tunnel and not beam in the AGS ring. The radiation source of concern for the area inside the HITL spur gate is beam losses in the AGS ring. This gate should be explicitly posted as a Radiation Area to avoid circumstances where the TtB tunnel might be down posted since it is not operating with beam.

**Appendix I: Chipmunk Data**

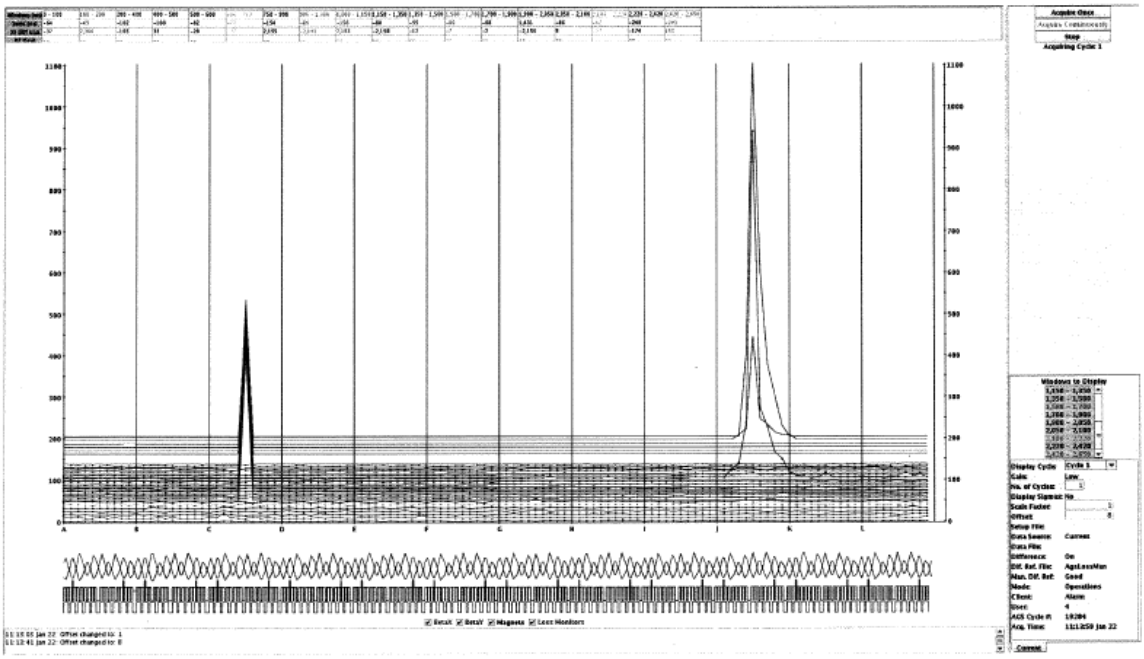



ChipmunkViewer
Database
Current Logs
Archived Logs
Live Data
Reports
Help
NM057 -- 913C FAN HOUSE
Jan-22-15
MREM/HR
0.5
0.4
0.3
0.1
0.0
00:01
01:01
02:01
03:01
04:01
05:01
06:01
07:01
08:01
09:01
10:01
11:01
DATA ENTRIES ARE IN 5-MINUTE INTERVALS
LAST HOUR AVERAGE: 0.31
Next Data
Prev Data
Sel Data
Continuous
List Data
Rescale
Autoscale
Next Mon
Prev Mon
Sel Mon


ChipmunkViewer
Database
Current Logs
Archived Logs
Live Data
Reports
Help
NM046 -- 913D FAN HOUSE
Jan-22-15
MREM/HR
0.6
0.4
0.3
0.1
0.0
00:01
01:01
02:01
03:01
04:01
05:01
06:01
07:01
08:01
09:01
10:01
11:01
DATA ENTRIES ARE IN 5-MINUTE INTERVALS
LAST HOUR AVERAGE: 0.46
Next Data
Prev Data
Sel Data
Continuous
List Data
Rescale
Autoscale
Next Mon
Prev Mon
Sel Mon




Thu_Jan_22_2015_111401_27671.gif (PNG Image, 2172 × 1229 pixels) http://www.cadops.bnl.gov/elog/graphics/rhic-pp_2015/Thu_Jan_2



**Appendix II: Present and Proposed posting for the Areas**

Revised Radiological Postings for Locked High Radiation Areas not protected by PASS.
3/26/15
Prior to down posting areas a routine dose rate survey will be performed.

| Area | Current Posting | Proposed Posting | Comments |
|---|---|---|---|
| Fences around C14 and K7 escape Hatches | HIGH RADIATION AREA<br>CONTROLLED AREA<br>RWP Required for Entry | RADIATION AREA<br>W/ Beam On<br>CONTROLLED AREA<br>Contact MCR for Beam Status<br>Access not Permitted With Beam on | Identified on RSC Safety Startup Check List<br>If high intensity protons are run again this area would need to be posted High Radiation Area. |
| Fan House A,B,C, E<br>*Pad Locked Requires MCR Key,*<br>*Access as per*<br>*C-AD OPM 4.46* | HIGH RADIATION AREA<br>With Beam on<br>CONTROLLED AREA<br>RWP Required for Entry | RADIATION AREA<br>CONTROLLED AREA<br>RWP located in B911 Training office<br>Follow C-AD OPM 4.46 for Access | Identified on RSC Safety Startup Check List<br>*C-AD OPM 4.46 provides entry guidance |
| NW Corner of Exterior wall of Target Building | HIGH RADIATION AREA<br>With Beam on<br>CONTROLLED AREA | RADIATION AREA<br>CONTROLLED AREA<br>RWP located in B911 | Identified on Safety Startup Check List<br>* C-AD OPM 4.46 |

| | | | |
|---|---|---|---|
| *Pad Locked Requires MCR Key,*<br>*Access as per*<br>*C-AD OPM 4.46* | RWP Required for Entry | Training office<br>Follow C-AD OPM 4.46 for Access | provides entry guidance |
| V-Target Gate<br>Double door, Pad lock, HP and MCR key | HIGH RADIATION AREA | RADIATION AREA<br>CONTROLLED AREA<br>RWP located in B911 Training office<br>Follow C-AD OPM 4.63 for Access | Identified on RSC Safety Startup Check List<br>**C-AD OPM 4.63 provides entry guidance |
| B914 Roof Security Fence<br>*Pad Locked Requires MCR Key,*<br>*Access as per*<br>*C-AD OPM 4.46* | HIGH RADIATION AREA<br>CONTROLLED AREA<br>RWP Required for Entry | RADIATION AREA<br>CONTROLLED AREA<br>RWP located in B911 Training office<br>Follow C-AD OPM 4.46 for Access | Identified on RSC Safety Startup Check List<br>* C-AD OPM 4.46 provides entry guidance |
| In primary area at tunnel from HITL to AGS | HIGH RADIATION AREA<br>W/ beam On | RADIATION AREA<br>CONTROLLED AREA<br>RWP located in B911 | This area is within the PASS system. Survey will have to be done at a later date.<br>Current posting needs to |

| | | | |
|---|---|---|---|
| | | Training office<br><br>Follow C-AD OPM 4.46 for Access | be verified. |
| Structure over C1 is posted to prohibit entry.<br><br>*No Door* | Entry Prohibited | RADIATION BARRIER | Identified on RSC Safety Startup Check List |
| Top of B914 plug door | HIGH RADIATION AREA<br><br>CONTROLLED AREA<br><br>RWP Required for Entry | CAUTION<br><br>ELEVATED WORK REQUIRES WORK PLANNING<br><br>Contact Liason Engineer or work planning manager for operational status and work planning. | Identified on RSC Safety Startup Check List<br><br>This area is within the posted Radiation Area of B914. |

*4.46 Procedure for Accessing the C-A Radiological Areas and Berms: AGS Ring Fan Houses (A,B,C,D and E), Northwest Corner of the Target Building, TANDEM/AGS ALCOVE, the Booster Berm/Bldg 914 Roof , the U-W (AtR) Berm, NSRL Berm, and the RHIC Berm During Accelerator Operation

**4.63 Accessing the Mothballed Vt and Vpri Areas